

WHAT IS CLAIMED IS:

1                   1.       An apparatus for dispensing a flowable product from a product  
2 package through a product outlet at or below a preset low temperature, the apparatus  
3 comprising:  
4                   a refrigerated container in which to dispose the product package, the container  
5 including a gas outlet and a return gas inlet;  
6                   a dispenser housing having a dispenser gas inlet coupled with the gas outlet of  
7 the refrigerated container to receive a cool gas from the refrigerated container, and a  
8 dispenser gas outlet coupled with the return gas inlet of the refrigerated container to return  
9 the cool gas to the refrigerated container, a product outlet extending from the dispenser  
10 housing to dispense the flowable product from the product package; and  
11                  a product flow line disposed in the dispenser housing and coupled between the  
12 product package and the product outlet, an external surface of the product flow line being  
13 exposed to the cool gas in the dispenser housing from the refrigerated container flowing  
14 between the dispenser gas inlet and the dispenser gas outlet.

1                   2.       The apparatus of claim 1 wherein the product flow line extends from  
2 the dispenser housing through the dispenser gas inlet of the dispenser housing to be coupled  
3 with the product package in the refrigerated container.

1                   3.       The apparatus of claim 1 further comprising a flow control device  
2 configured to drive the cool gas from the refrigerated container through the gas outlet and the  
3 dispenser gas inlet into the dispenser housing and through the dispenser gas outlet and return  
4 gas inlet back into the refrigerated container.

1                   4.       The apparatus of claim 3 wherein the flow control device comprises a  
2 fan disposed in the refrigerated container generally between the gas outlet and the return gas  
3 inlet.

1                   5.       The apparatus of claim 1 further comprising a pump coupled to the  
2 product flow line to pump the flowable product from the product package to the product  
3 outlet.

1                   6.       The apparatus of claim 5 wherein the pump comprises a bellows pump  
2 disposed in the dispenser housing.

1                   7.       The apparatus of claim 6 further comprising an actuation lever  
2 protruding to an exterior of the dispenser housing which is movable by a user to actuate the  
3 bellows pump.

1                   8.       The apparatus of claim 1 wherein the dispenser housing includes a  
2 flow channel guide which guides the cool gas to flow along substantially the entire external  
3 surface of the product flow line.

1                   9.       The apparatus of claim 8 wherein the flow channel guide includes a  
2 return passage to guide the cool gas to the dispenser gas outlet.

1                   10.      An apparatus for dispensing a flowable product from a product  
2 package through a product outlet at or below a preset low temperature, the apparatus  
3 comprising:

4                   a housing in which to dispose the product package;

5                   a cooling unit configured to generate a cool gas in the housing to cool the  
6 product package disposed in the housing;

7                   a product flow line disposed in the housing and coupled between the product  
8 package and a product outlet to dispense the flowable product from the product package;

9                   a flow channel guide disposed in the housing to guide the cool gas to flow  
10 from a first region in the housing near the cooling unit to a second region in the housing near  
11 the product outlet along at least a portion of an external surface of the product flow line, the  
12 flow channel guide including a return passage to guide the cool gas away from the product  
13 flow line back to the first region near the cooling unit; and

14                  a flow control device configured to drive the cool gas from the first region in  
15 the housing near the cooling unit to the second region near the product outlet and through the  
16 return passage back to the first region.

1                   11.      The apparatus of claim 10 wherein the flow control device comprises a  
2 fan.

1                   12.      The apparatus of claim 10 wherein the flow channel guide is  
2 configured to guide the cool gas to flow along substantially an entire external surface of the  
3 product flow line.

1                    13.     The apparatus of claim 10 further comprising a pump coupled to the  
2 product flow line to pump the flowable product from the product package to the product  
3 outlet.

1                    14.     The apparatus of claim 13 wherein the pump comprises a bellows  
2 pump disposed in the dispenser housing.

1                    15.     A method of dispensing a flowable product at or below a preset low  
2 temperature, the method comprising:

3                    disposing a product package in a container;  
4                    generating a cool gas in the housing to cool the product package disposed in  
5 the housing;

6                    coupling a product flow line disposed in the housing between the product  
7 package and a product outlet;

8                    guiding the cool gas to flow from a cooling region in the housing near the  
9 product package to a dispensing region in the housing near the product outlet along at least a  
10 portion of an external surface of the product flow line, and away from the product flow line  
11 back to the cooling region near the product package; and

12                   providing a pump to pump the flowable product from the product package  
13 through the product flow line to the product outlet.

1                    16.     The method of claim 15 wherein generating a cooling air in the  
2 housing comprises providing a cooling unit in the housing.

1                    17.     The method of claim 15 wherein the cool gas is guided to flow along  
2 substantially an entire external surface of the product flow line.

1                    18.     The method of claim 15 wherein the pump includes an actuation lever  
2 protruding to an exterior of the housing which is movable by a user to actuate the pump.

1                    19.     The method of claim 18 wherein the pump comprises a bellows pump.

1                    20.     The method of claim 15 further comprising driving the cool gas to flow  
2 from the cooling region to the dispensing region and back to the cooling region by a fan.